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Application No.	S2003/0427
Date of Filing	5 June 2003
Applicant	ENVIROVEST HOLDINGS LIMITED, an Irish company of 3 Casement Square, Cobh, County Cork, Ireland.

Dated this 18 day of June 2004.

An officer authorised by the
Controller of Patents, Designs and Trademarks.

S2003/0467

FORM NO. 1

REQUEST FOR THE GRANT OF A PATENT

PATENTS ACT 1992

The Applicant(s) named herein hereby request(s)
[ ] the grant of a patent under Part II of the Act
[X] the grant of a short-term patent under Part III of the Act
on the basis of the information furnished hereunder.

1. Applicant(s)

ENVIROVEST HOLDINGS LIMITED
3 Casement Square
Cobh
County Cork
Ireland
an Irish Company

2. Title of Invention
Improvements in and relating to material dewatering, water treatment
and energy generation.

3. Declaration of Priority on basis of previously filed application(s) for same invention (Sections 25 & 26)

Previous Filing Date	Country in or for which filed	Filing No.

4. Identification of Inventor(s)

Name(s) and addresse(s) of person(s) believed by the Applicant(s) to be the inventor(s)
Christopher Fredrick Neilan Seebach
a US Citizen of Rusheen, Ballygriffin, Kenmare, County Kerry, Ireland

5. Statement of right to be granted a patent (Section 17(2) (b))

The applicant derive the right to file by virtue of a Deed of Assignment dated June 4, 2003.

6. Items accompanying this Request

(i)	[X]	prescribed filing fee (Euro 60.00)
(ii)	[ ]	specification containing a description and claims
	[X]	specification containing a description only
	[X]	Drawings referred to in description or claims
(iii)	[ ]	An abstract
(iv)	[ ]	Copy of previous application(s) whose priority is claimed
(v)	[ ]	Translation of previous application whose priority is claimed
(vi)	[X]	Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant(s))

7. Divisional Application(s)
The following information is applicable to the present application which is made under Section 24 -

Earlier Application No.
Filing Date:

8. Agent

The following is authorised to act as agent in all proceedings connected with the obtaining of a patent to which this request relates and in relation to any patent granted -

Name & Address

Cruickshank & Co. at their address recorded for the time being in the Register of Patent Agents is hereby appointed Agents and address for service, presently 1 Holles Street, Dublin 2.

9. Address for service (if different from that at 8)

Signed Cruickshank & Co.

By:- Executive.

Agents for the Applicant

Date June 05, 2003.

"Improvements in and relating to material dewatering, water treatment and energy generation"

Introduction

The present invention relates to a pneumatic dewatering apparatus for wet product comprising a cyclone chamber connected to a fan with blades, each blade causing individual flow vortices to be formed downstream of the fan which in turn combine to form cyclonic flow within the cyclone chamber. It further relates to a pneumatic method of dewatering wet product. It is particularly directed to the apparatus of our co-pending PCT Patent Application No. PCT/IE03/00062 (Solid Solutions Limited) the inventor of which is the inventor of the present application. It also relates to water treatment and desalination with energy generation in said apparatus and venturi, pump and suction apparatus. All the disclosure of this patent application is incorporated herein by direct reference. Thus, the discussion of the whole dewatering apparatus and the theory thereof is not described herein.

Statements of Invention

According to the invention, there is provided a pneumatic de-watering apparatus for wet product comprising a cyclone chamber connected to a fan with blades, each blade causing individual flow vortices to be formed downstream of the fan which in turn combine to form cyclonic flow within the cyclone chamber characterised in that a plasma tube is wrapped around the chamber, the plasma tube is in the form of a toroidal donut. The device may be inserted in a pipe or cyclone chamber (hereinafter called cyclone chamber) where the flow is generated by venturi, pump or suction.

In another embodiment of the invention, the plasma tube is spirally wound around the cyclone chamber.

In a still further embodiment of the invention, electromagnets are mounted onto the plasma tube.

In a still further embodiment of the invention, the toroidal shape is spherically wound around the pipe and incorporates both an inert gas and an electromagnetic generator. Each toroidal shape is preferably an egg-shaped tube in cross section.

Further, the invention provides a pneumatic de-watering apparatus for wet product comprising a cyclone chamber connected to a fan with blades, each blade causing individual flow vortices to be formed downstream of the fan which in turn combine to form cyclonic flow within the cyclone chamber or venturi, pump, suction within a pipe /cyclone chamber characterised in that one of an anode and a cathode is mounted substantially centrally in the chamber and the other of the anode and cathode is spaced-apart and insulated therefrom.

Ideally, one of the cathode and anode forms the inner wall of the chamber and is insulated by a suitable material such as a ceramic. In this embodiment, there may also be a toroidal tube wrapped around the chamber.

In one embodiment of the invention, the cyclone chamber comprises vortex flow forming sections having vortex flow forming means to cause reformation of vortex flow within the cyclone chamber and dissipation of the vortex flow along the cyclone chamber remote from the fan. Further, the cyclone chamber comprises a vortex flow shedding section fed by the vortex flow forming section.

Detailed Description of the Invention

The invention will be more clearly understood from the following description of some embodiments thereof, given by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a diagrammatic sectional view of portion of an apparatus according to the invention,

Figs. 2(a) and (b) are details of portions of the apparatus of Fig. 1,

Fig. 3 is a further detail of Fig. 1,

Fig. 4 is an alternative device for use with the apparatus of Fig. 1,

Fig. 5 is a view similar to Fig. 1 of an alternative construction of apparatus according to the invention,

Fig. 6 is an enlarged view of portion of the apparatus of Fig. 5,

Fig. 7 is a view of another apparatus according to the invention,

Fig. 8 is a still further view of another dewatering apparatus according to the invention, and

Fig. 9 is a detail of another device used in accordance with the invention.

Referring to the drawings and initially to Fig. 1, there is provided a drying apparatus, indicated generally by the reference numeral 1, which comprises a cyclone chamber 2 having an impeller suction centrifugal fan 3 located within a casing or housing 4. The suction fan 3 is a substantially conventional impeller suction fan having blades 5 for creating a cyclonic air stream within the cyclone chamber 2 and is somewhat similar to the fan already described in the previously mentioned PCT Published Specification WO 98/35756 (Next Century Technologies Limited). The fan, as previously described in this specification, has been provided with a casing or housing 4 which reduces in cross-section towards the exhaust end. A toroidal or flat scroll unit surrounds the impeller. Additionally, the blades 5 of the impeller have a perforated liner with transversely arranged ridges to form cavitation forming recesses. The fan 3 is generally one which imparts centrifugal flow but may impart centripetal flow.

The cyclone chamber 2 is divided up into a number of sections, not always physically different, such as one would expect from examination of Fig. 1, but into sections having different functions, namely, a vortex flow forming section 6 and a vortex flow shedding section 7. In some cases, as can be seen from Fig. 1, the sections are

quite physically distinct and, in other cases, they are not. However, in each case, a vortex flow forming section 6 is followed by a vortex flow shedding section 7. For example, the casing or housing 4 of the fan, as is normal, provides a vortex flow shedding section, although it is not identified as such. Further, again, when a vortex flow has been formed, the section in which the vortex flow is travelling, after having been formed, has, strictly speaking, a vortex flow shedding function in that the vortex flow tends to be dissipated along it, particularly if the vortex flow is carrying out work and disruption of the material. However, for convenience, it is easier to describe them as distinct sections.

The cyclone chamber 2 comprises at its downstream or proximal end, a frusto-conical air inlet 8 having vortex flow forming vanes 9 on the interior surface thereof and is thus a vortex flow forming section 6. The frusto-conical air inlet 8 feeds a cylindrical portion 10 into which projects, at 11, a material infeed hopper 12. The cylindrical portion 10 forms a vortex flow shedding section 7 and a vortex flow forming section 6. The vortex flow shedding section mounts vortex flow shedding means, namely, a plurality of vortex flow shedding devices, indicated generally by the reference numeral 13. The vortex flow shedding devices 13 comprise a plurality of bars 14 projecting some way into the vortex flow shedding station 7. The bars 14 project into the vortex flow shedding station 7 so as to incline at various inclinations to the interior downstream and upstream of a further vortex flow shedding device 13 formed by a sphere 15 mounted centrally within the vortex flow shedding section 7 by radially arranged support arms 16 which will also have a vortex flow shedding function. The vortex flow shedding section 7 feeds into a vortex flow forming section 6 having vortex flow forming means provided by a vortex flow forming device, indicated generally by the reference numeral 17. In this embodiment, an egg-shaped device, hereinafter, for simplicity, an egg 18, illustrated in more detail in Fig. 2(a). The egg 18 has an upstream portion 19 which is broader than its downstream portion 20. Vanes 21, for assisting in establishing vortex flow, are mounted on the exterior surface of the egg 18. The egg 18 is mounted by radially arranged bars 22 within the vortex flow forming section 6. Thus, the vortex flow forming station 6 is provided which then discharges via a reducing cross sectional portion 23 of the cylindrical portion 10 into a vortex flow shedding station 7 of reducing cross sectional area, namely, a frusto-conical shaped section 24 of the cyclone chamber 2, which then

communicates with another vortex flow forming section 6, namely, another egg 18 also within the section 24, which again has a vortex flow forming device 17 mounted therein.

Mounted beyond the vortex flow shedding section 7 is a further vortex flow forming device 17 providing another vortex flow forming station 6. The vortex flow forming device 17, in this embodiment, is a further egg 25 (illustrated in more detail in Fig. 2(b)), mounted again by rods 26 in the section 24 of the cyclone chamber 2. The egg 25, in this particular construction of egg 25, has further vortex flow forming and directing vanes 27 and additionally this egg 25 is symmetrical about its vertical axis such that its downstream end or proximal end 28 is of the same shape as its upstream or distal end 29. Then, the frusto-conical portion 24 discharges into another cylindrical portion 35. This cylindrical portion 30 again forms part of the vortex flow forming section 6. It will be appreciated that there will be a certain amount of flow shedding or dissipation taking place now within the cylindrical portion 30.

Then, adjacent an exit 32 of the cylindrical section 31, which again is of reducing cross section, there is mounted a further egg 25. This egg 25 again concentrates the vortex flow that may have been slightly dissipated in the vortex flow forming section 6 so that a tight vortex is then delivered into the next part of the cyclone chamber 2, namely, a frusto-conical portion 33. The frusto-conical portion 33 houses a further vortex flow forming device 17, again provided by an egg 18. The vortex flow forming station 6 continues on into a further cylindrical portion 34 which again has a discharge outlet 35 of reducing cross-section into a further vortex flow shedding station 7. Mounted in the discharge outlet 35 is a further egg 25. This vortex flow shedding station 7 is formed in another portion of the chamber 2 and comprises initially an expanding portion 37 which in turn leads into a portion 38 of decreasing cross-sectional area.

A main water drain-off pipe 40 is fed by a plurality of further drain-off pipes 41, each incorporating non-return valves 43. The pipe 40 feeds a sump 42. The drain-off pipes 41 are connected at various places to the cyclone chamber 2. A material return pipe 45 connects an outlet hopper 46 for the fan 3 to the material infeed hopper 12 for recirculation of material.

It will be appreciated that, for example, the two eggs 18 and 25 are interchangeable and that similarly, whether they mount respectively vanes 21 and 27, is optional.

Ideally, the vortex flow shedding bars 14 can be provided by vertically scored threaded bolts because their roughened surface is ideal for vortex shedding. The bars 14 also act as a safety device preventing, for example, a person's hand being dragged into the cyclone chamber.

Further, as illustrated in Fig. 3, around the cyclone chamber 2, are a number of toroidal donuts 46 comprising an enclosed tube 47. It is encased in an electromagnetic coil 48 and mounts electromagnets 49. The tube 47 is filled with an inert gas, for example, argon which may be seeded with a metal like potassium salts.

In use, the electromagnetic coil 48 is adapted to produce coherent electromagnet waves such as hydrodynamic shockwaves that are capable of giving rise to compression and rarefacation of particles and also capable of producing massive ionisation and subsequent desolvation, vaporisation, disassociation and excitation of the media flowing in the tube 47 which must be a non-ferrous pipe, preferably one that is self-exciting such as barium titanate. These shock waves produced in this way are thought to affect wet media passing through the cyclone chamber to assist in dewatering and in venturi and pipes whose flow is generated by pump or some suction device and whose water requires treatment or desalination.

In operation, wet material such as, for example, wet sewage is introduced into the inlet hopper 12 from which it is delivered at 11 into the vortex flow shedding station 7 where it is impinged upon by air drawn through the inlet 8 which has been imparted with vortex flow by the vanes. Then the vortex flow is destroyed in the vortex flow shedding section 7 by the vortex flow shedding devices, namely, the bars 14 and the sphere 15. Any vortex flow that has not been dissipated will then be dissipated as the flow hits the egg 18 at its downstream end 19. Then the egg 18 and vanes 21 will cause vortex flow to be reformed and a tight centripetal vortex will be formed adjacent the downstream portion 20 of the egg 18. This vortex flow then delivers out into the vortex flow shedding section 7 which is provided by the frusto-conical portion 24 of

the cyclone chamber 2. This frusto-conical portion 24 forms an expansion chamber such that a vacuum will be formed behind the vortex flow being delivered into the vortex flow shedding station 7. Then, the material and air is delivered down through various vortex flow forming and vortex flow shedding stations to the fan 3.

A commonly observed hydro-magnetic property of plasma is the tendency of the plasma to spontaneously form thin filaments often forming spirals in the container or magnetic bottles in which the plasma is accelerated. As explained in the above mentioned PCT Application No. PCT/IE03/00062, in-winding vortices within the spiralling crimped ovaloid pipe are self accelerating and these centripetally oriented vortices (An inward-moving, densifying) water vortex from the perspective of Reynolds numbers, is that the laminar flow is made to self-conform as it collapses in on itself - Nature's self-ordering force which Viktor Schauberger called biological magnetism. It is well known that a centripetally flowing fluid can create tremendous turbulence to anything which resists it - for example, a tornado. Tornadoes form out of layers of hot and cold air which move upon one another. Out of the rather chaotic situation we have the formation of an organized flow of energy of several kinds. There is an electrical potential created between the upper rim (positive ions) and the centre of the vortex (negative ions.) There is also a temperature gradient - a self-organizing condition which draws heat from the surrounding medium and puts it to use. Large tornadoes and obviously hurricanes contain amounts of energy equivalent to nuclear weapons.

Referring to Fig. 4, there is illustrated another construction of donut, indicated generally by the reference numeral 70, having locators 71 for magnetic field devices.

Referring to Figs. 5 and 6, there is illustrated an alternative construction of de-watering apparatus, again indicated generally by the reference numeral 1, in which parts similar to those described with reference to the previous drawings, are identified by the same reference numerals. In this embodiment, the sphere 15 and eggs 25 are mounted between three equi-spaced struts 51 and a central bar 52 projects through the cyclone chamber 2. The feed hopper 12 is now positioned in a frusto-conical portion 53 and projects two thirds of the way along the sphere in the downstream direction. The frusto-conical portion 53 connects with a cylindrical

portion 54. Then, there is provided what is effectively an expansion chamber by a further portion of the cyclone chamber 2 comprising an increasing frusto-conical section 55, a cylindrical section 56 and a decreasing frusto-conical section 57 in the direction of the air flow and this portion then connects with a further cylindrical portion 54 which in turn feeds into a further portion 37. It will be appreciated that the whole apparatus can consist of the one elongate cylindrical chamber with various vortex flow forming and shedding sections. In this embodiment, the bars 52 form anodes and the various cylindrical portions 54, the frusto-conical sections 55, cylindrical section 56 and frusto-conical section 57 all comprise a cathode 60 covered by a ceramic insulator 61. Portion of the construction of the cylindrical section 54 is illustrated in Fig. 6. Thus, in use, if the cathode is at the centre, we effectively create a bleach, chlorodioxide, hydrogen peroxide, and so on, which gives off free hydrogen. If, however, we make the inner bar a cathode, we get a hydroxide. Where we accompany these anodes and cathodes with like or opposing magnetic fields we further weaken the bond for hydrogen as water has two bonds - electrical and magnetic. This process lends itself to desalination in a pipe where flow is generated by venturi, pump, or suction and the chlorine is separated from the sodium.

The ions generated by the presence of the cathode or anode respectively are important. In the first instance, free hydrogen is given off (this is known but not the method whereby the hydrogen electrons can be stripped off so this apparatus also serves as a response to the need for such a device for transportation etc. as the force of the travelling in-winding apparatus will carry off the electrons). The result is a very acidic condition particularly in the presence of salt water or water which salt is added it has been known the achieve 0.025 pH in cocktails of ClO_2 , Cl, H_2O_2. Adding salt to particularly hazardous waste which will benefit form this sort of bleaching effect with this device will be most effective.

Conversely, reversing the poles will produce copious amounts of various forms of sodium hydroxyls up to pH 12. This increase in concentration will not only serve to desalinate water but to increase the apparent metal content for magneto hydrodynamic (MHD) produced electricity. This device on an industrial scale would solve the need to produce copious amounts of extreme pH as required - for example

the acid rich tailing waters from a mining operation which destroys agriculture and the alkalinity will bind the heavy metals. This apparatus will solve many wastewater problems and make new chemical processes possible. The state of the art is known and well developed for instance, in Russia, however the state-of-the-art requires that the process be contained in a series of small metal tubes and the unit is expensive for the small amounts of product produced. It is proposed that an MHD electrical generating facility be placed on the cyclone chamber and as well, surrounding the frusto-conical cone to collect electricity generated by the metal sodium hydroxide.

Finally the ceramic sleeve can be removed and a situation whereby plasma can be produced using electrodes similar to those used recently in laboratory experiments on disassociation and heat generation at up to 200% efficiency protruding together from the egg will again produce a system whereby such a phenomena can be industrialised. In this instance a new process for generating heat can be obtained by adding potash to the feedstock whereby anomaly hydrogen and subsequent heat would be produced at their recombination in the plasma. Again this process can industrialize such a phenomena. The advantage in drying or dewatering would be evident.

Referring now to Fig. 7, there is illustrated an egg 25, as previously described, used to produce an in-winding centripetal vortex in a frusto-conical section of the cyclone chamber, again identified by the reference numeral 24. The egg 25 which may have a magnetic centre of various shapes and orientation preferably supporting the anode or cathode respectfully is surrounded by a spiralling anode or cathode and a ceramic or other suitable material also spirally wound and possibly accompanied with a magnet and shaped in a sloping manner to conform to the reduced area of flow generated by the egg to shield the electrolyte but not the ions generated by the presence of the cathode or anode respectively is provided. In the first instance, free hydrogen is given off. The result is a very acidic condition particularly in the presence of salt water or water which salt is added it has been known the achieve 0.025 pH in cocktails of ClO_2 , Cl, H_2O_2. Adding salt to particularly hazardous waste which will benefit form this sort of bleaching effect with this device will be most effective.

A pre-treatment device to the afore-described apparat us in the placement of a cone magnet inserted into an egg pointing downstream so that the in-winding vortex is fully treated by the magnetic orientation and a ring magnet is placed around the field Preferably on the outside of a surrounding nonferrous pipe preferably a barium titanate pipe. The ring magnet is opposed in orientation for enhancing ionisation. The process in this instance is to have a series of triangular magnets in alternative polarities and a series of these ring magnets alternating themselves in position to create chaos and destabilise the ions prior to chemical activation for a more efficient processing.

It is also envisaged that there may be provided an egg facing the previous egg with the point of the cone having a similar magnetic orientation within the egg facing the point of the egg and cone opposite it to make a coherent line of force and the orientation of the ring magnets adjusted accordingly.

Referring to Fig. 8, there is illustrated another cyclone chamber, again identified by the reference numeral 2, around which is wrapped a spirally wound device, indicated generally by the reference numeral 80, substantially similar to the device previous described, except that it is now a continuous device wrapped around the cyclone chamber 2.

Referring to Fig. 9, there is illustrated additional pre-treatment devices, indicated generally by the reference numeral 90, comprising triangular magnets 91 or ring magnet which is opposed in orientation for enhancing ionisation.

It is possible to have a series of these ring magnets alternating themselves in position to create chaos such as illustrated in Fig. 9(a), thus destabilising the ions prior to chemical activation for a more efficient processing. The purpose is that the in-winding vortex is fully treated by the magnetic orientation and the ring magnet placed around the field assists in this.

In the specification the terms "comprise, comprises, comprised and comprising" or any variation thereof and the terms "include, includes, included and including" or any variation thereof are considered to be totally interchangeable and they should all be

afforded the widest possible interpretation and vice versa.

The invention is not limited to the embodiment hereinbefore described, but may be varied in both construction and detail.

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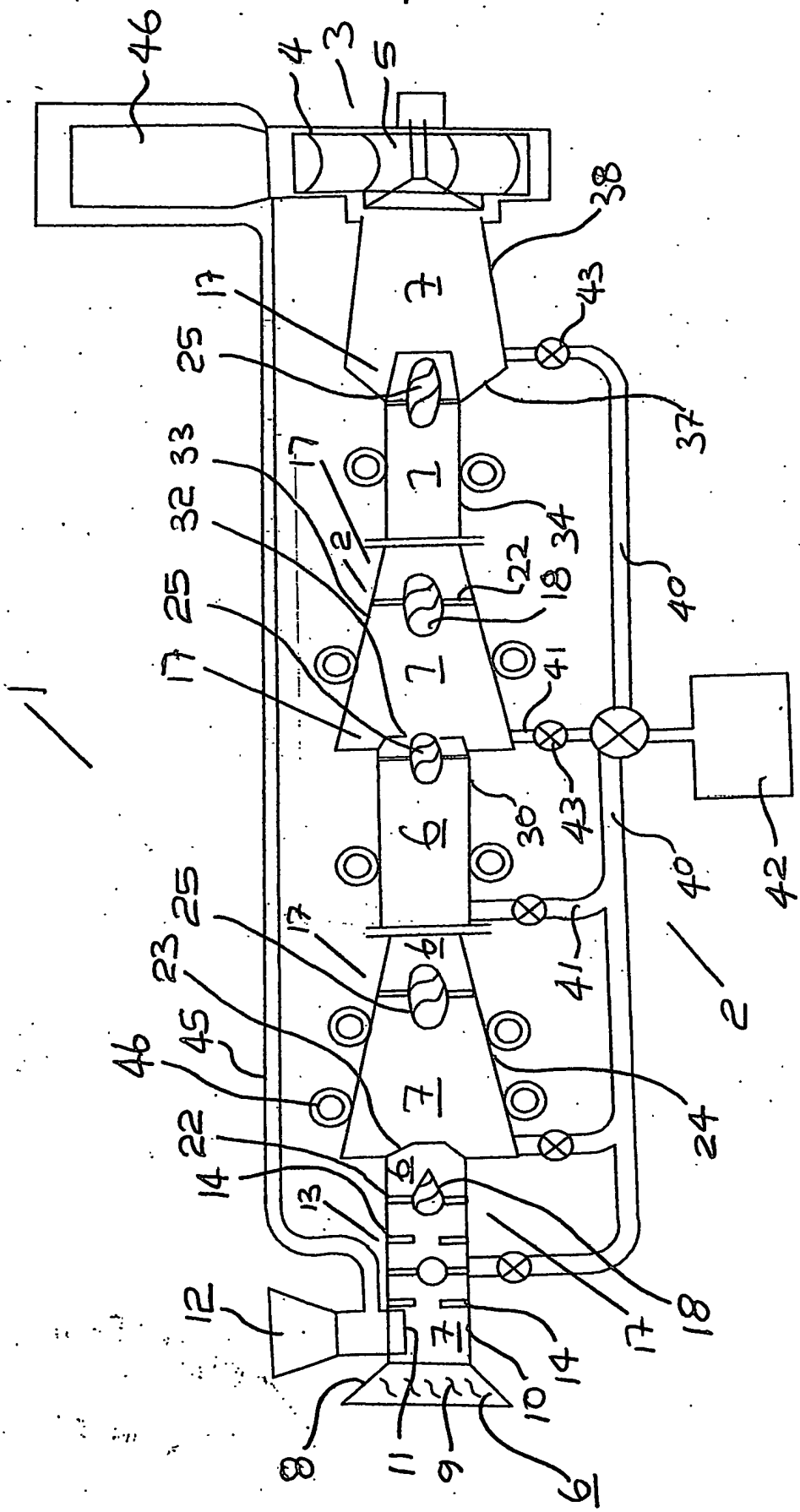
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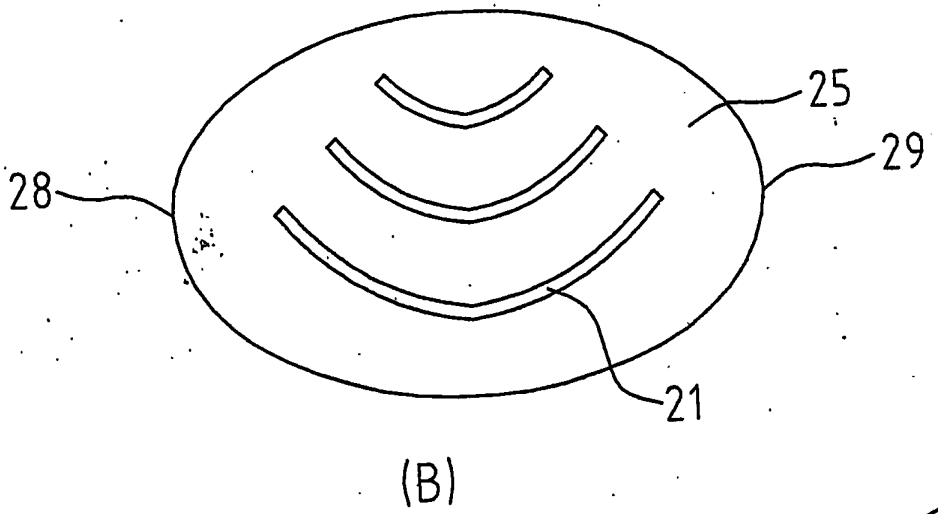
Fig1



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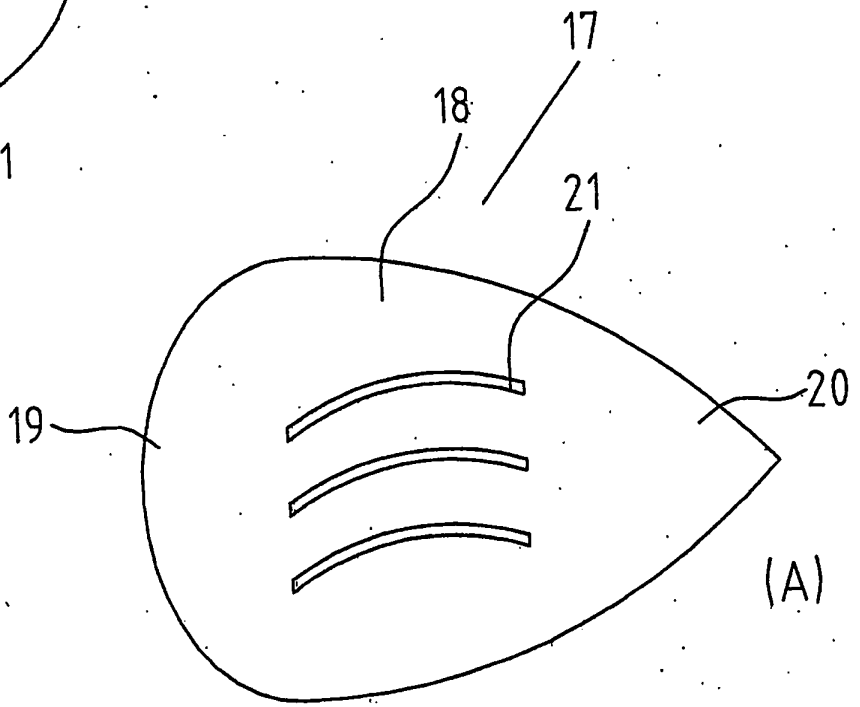

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Fig. 2

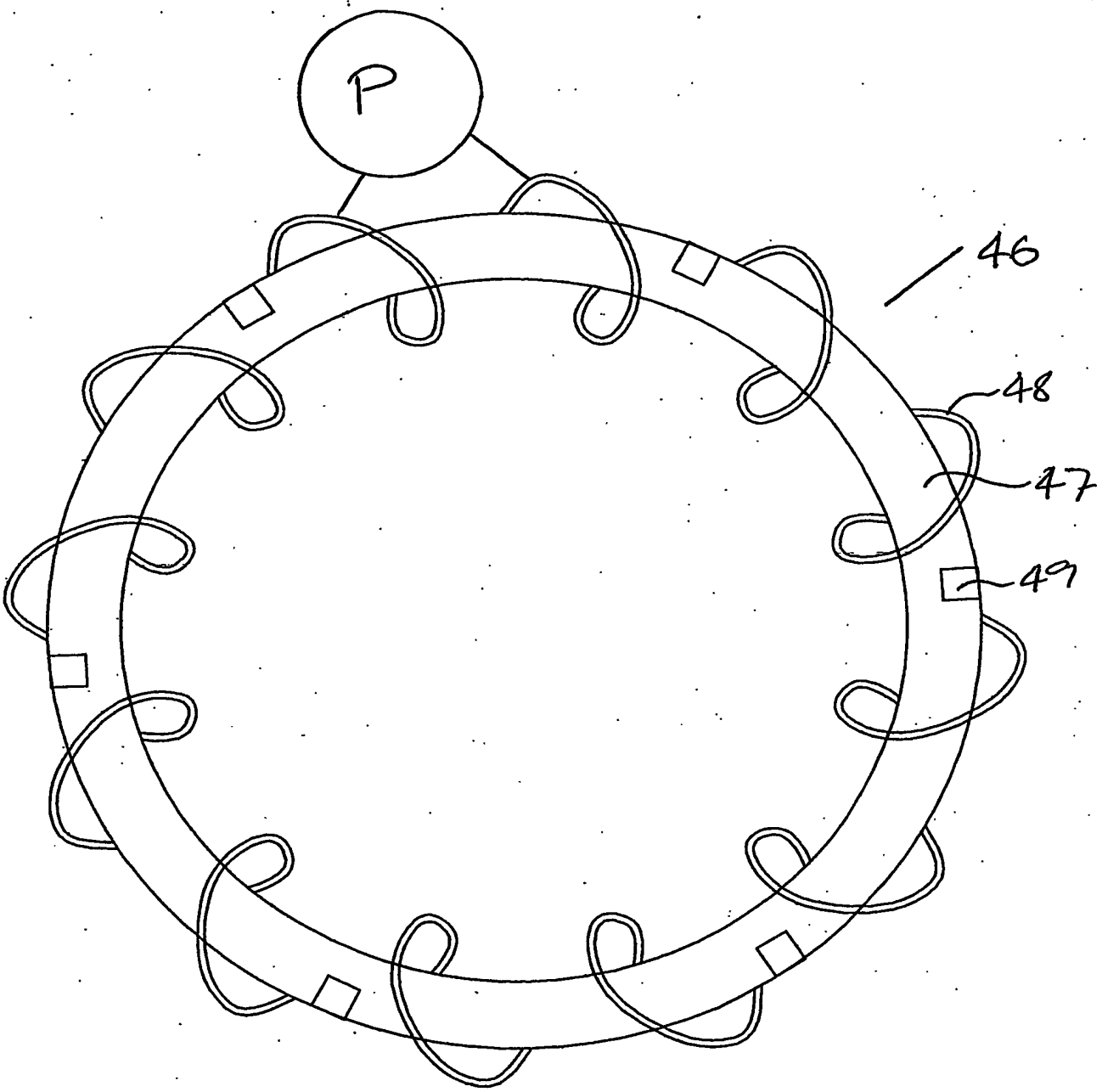

Fig. 3.

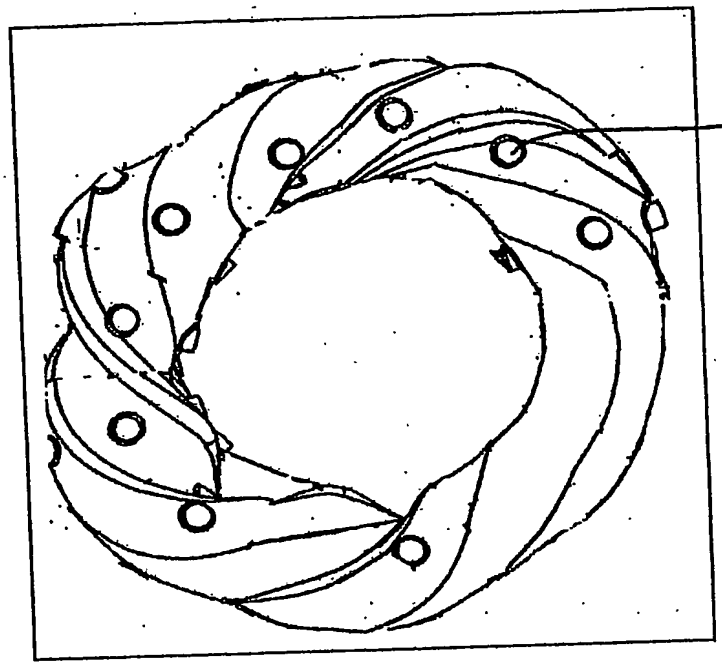

Fig4.

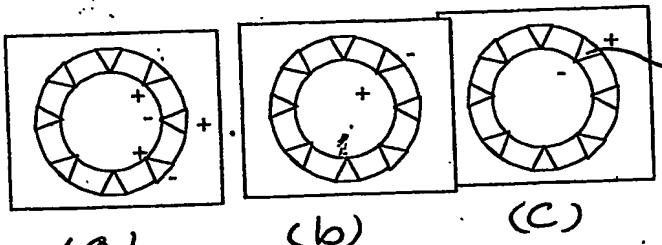

Fig 9

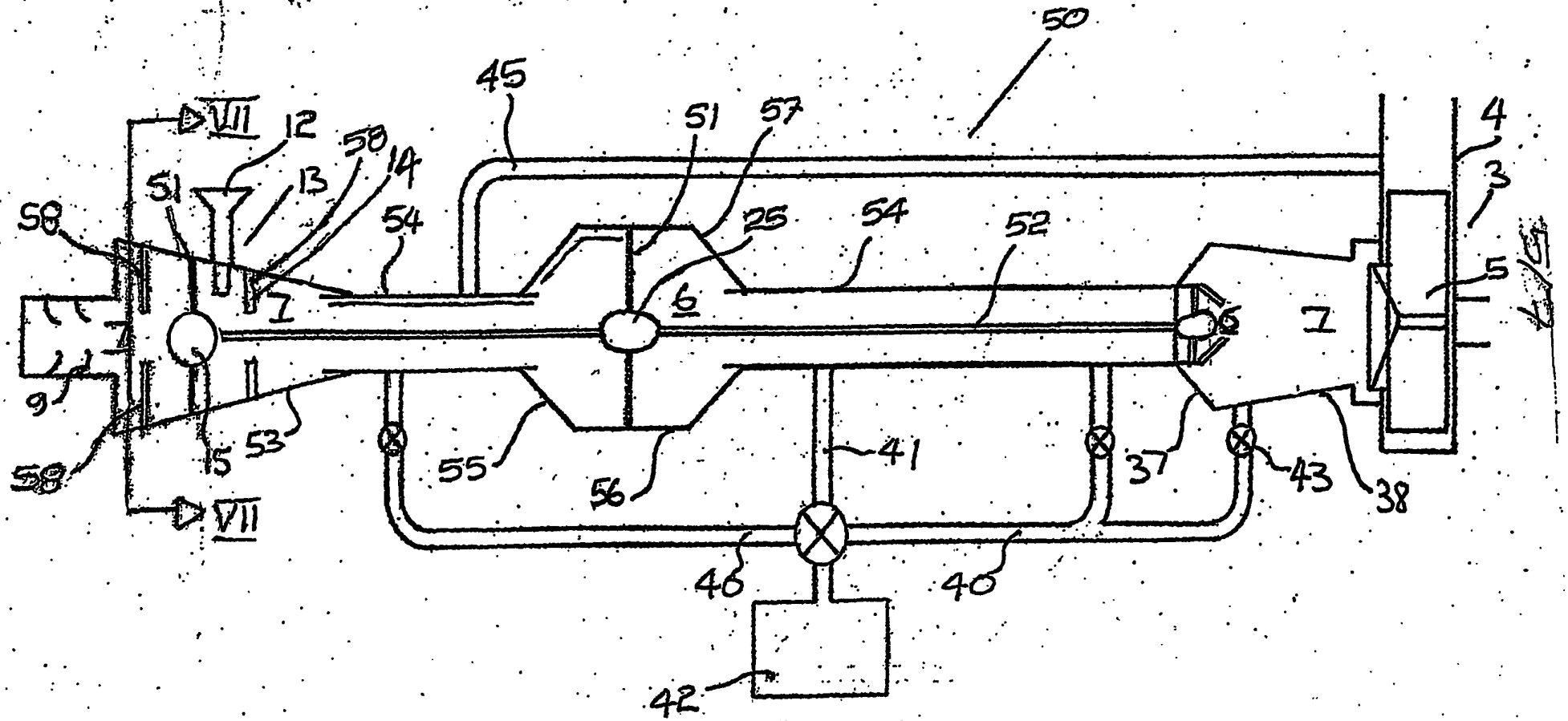
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Fig 5

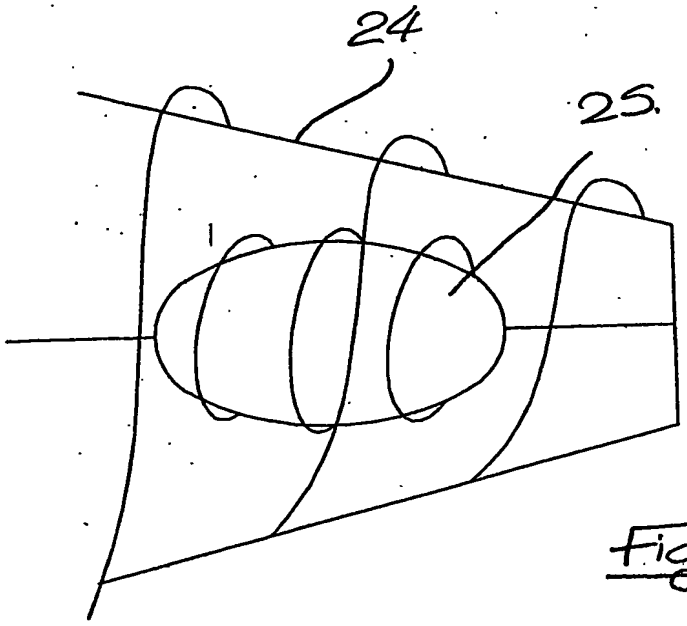

Fig. 7

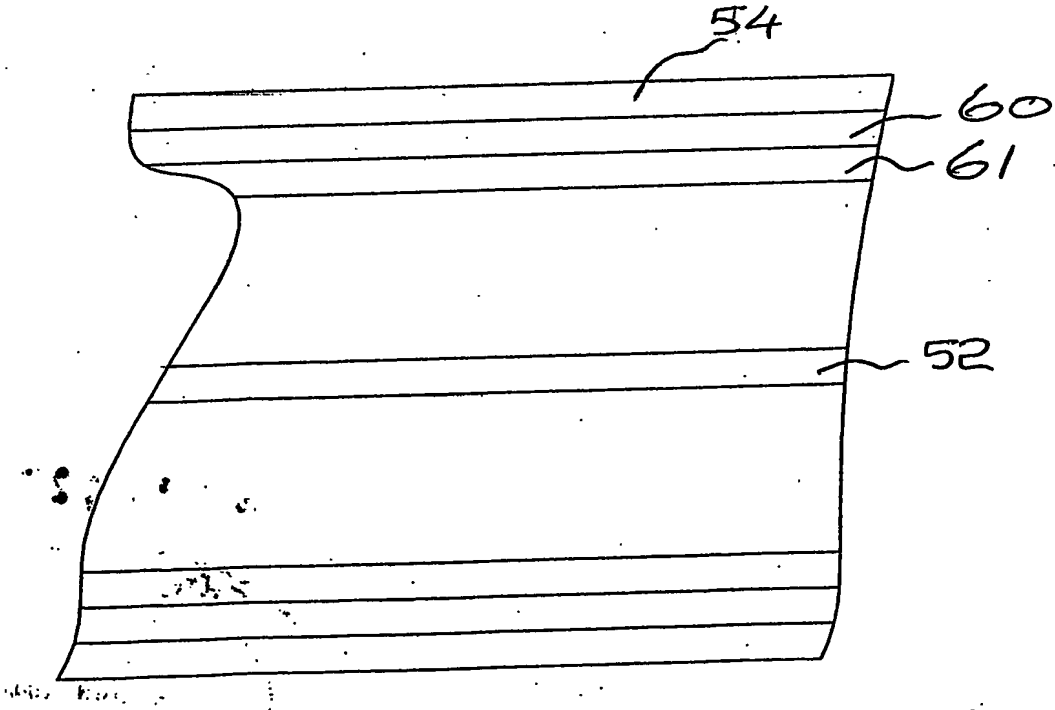

Fig 6

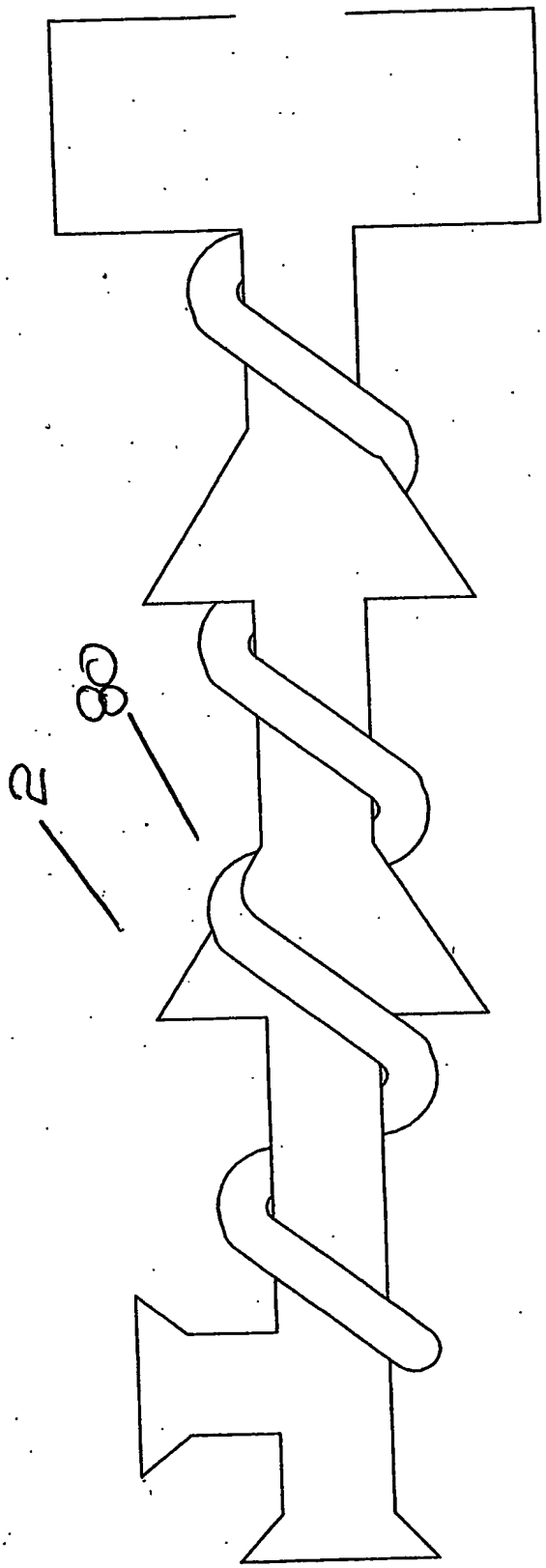

Fig 8